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College of Agriculture, Forestry and Consumer Sciences

West Virginia Agricultural and Forestry Experiment Station

By Jack Coster

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Table of Contents

Introduction 1

Research and Teaching Facilities 2
- Morgantown Area Farms and Forests 2
  - Agronomy Farm. 2
  - Animal Sciences Farm 3
  - Horticulture Farm 4
  - Reedsville Farm 5
  - University Forest 6
  - University Farm Woods 7
- Outlying Farms and Forests 7
  - Kearneysville Tree Fruit Research and Education Center 7
  - Reymann Memorial Farm 8
  - Tygart Valley Forest 9
  - Willow Bend Demonstration Farm 9

Research Publications 10

Land Uses 10

Community Benefits 11

Meeting Community Concerns 12

Issues Impacting the Farms and Forests 13
- Continued pressure from university and non-university parties for non-academic or non-agricultural uses of Morgantown farms and forests 13
- Development of natural gas deposits at the University Forest 14
- Proposed West Run Bypass 14
- Retaining the amount of property necessary to meet future needs 14

Meeting Future Needs 14
- Future research focuses 15
- Future facility needs 15
- Farm Master Plan 16

Conclusion 17

Appendix I. Research Publications 18

Appendix II. Land Uses of WVU Farms and Forests 19

Introduction

The West Virginia University College of Agriculture, Forestry and Consumer Sciences is the oldest college at WVU. In fact, when the door to what is now WVU was opened in 1867, the name of the institution was the West Virginia Agricultural College. In response to the 1862 Morrill Land-Grant College Act, the purpose of the College was to establish places of learning in order to instruct citizens in "such branches of learning as are related to agriculture and the mechanic arts."

In 1887, President Grover Cleveland signed the Hatch Act, which authorized the establishment of Agricultural Experiment Stations in each state. In 1888 the West Virginia Agricultural Experiment Station was authorized by the Board of Regents and in 1889 the station was located at WVU. Over the next several years its staff was increased to six scientists.

The experiment station's first farm was purchased in 1895 with funds appropriated by the state legislature. The farm was 81 acres in size and located adjacent to the original WVU campus near the current Mountainlair on the downtown campus. It was sold in 1899 and a 90 acre farm was purchased. Known as the Dairy Farm, this second farm is still in use by the experiment station today, although its barn was destroyed by an arsonist in 1974. The farmhouse on this site is today known as the Bicentennial House, but for many years it was called the Dean's House because it was the residence of the college's deans.

Farm acreage for teaching and research near the WVU campus was expanded considerably in 1915 when the City of Morgantown and Monongalia County provided the experiment station with $75,000 for purchase of 687 acres. These lands comprise the core of the present-day poultry, horticulture and animal science farms at Morgantown. In later years, additional research and teaching farms and forests were acquired by the experiment station, resulting in the properties as they are today.

The mission of the WVU College of Agriculture, Forestry and Consumer Sciences and the West Virginia Agricultural and Forestry Experiment Station is

> ". . . to provide high quality undergraduate and graduate education, conduct basic and applied research, engage in other creative and scholarly activities, and perform public outreach and service. The future presents tremendous scientific, economic and social challenges as a result of the globalization of the economy, increasing population and the growing importance of environmental and consumer issues. Society expects increased benefits from its public-supported institutions. College administrators, faculty, staff, and students are responsive to these expectations through interdisciplinary programs designed to impart knowledge, promote leadership, build problem-solving teams, address critical issues and enrich the lives of citizens of West Virginia, while protecting the environment in which we live. These programs range from local to international in scope and promote the wise use of natural, renewable, and human resources."

Suitable farm and forest areas, with long-term dedication to teaching, research, and outreach programs, are central to the ability of the college and the experiment station to accomplish this mission. Knowledge of the land's prior use and treatment is often vital to subsequent research or to principles being taught or demonstrated. Farms and forests are, in effect, outdoor laboratories and are as essential as other teaching or research laboratories.

Research activities are carried out on campus and at several facilities and centers located throughout the state. Among these sites are seven farms and three forests. Work at these farms and forests is not limited to research but includes significant amounts of instruction and numerous service and outreach activities.

Management of these operations is challenging, especially since there are almost 2,700 acres of farmland and 9,200 acres of forests (see Land Uses). Their locations range from the eastern panhandle to the southern border of the state. The various locations provide excellent diversity of soil and climatic conditions, a situation essential for research in the state due to its heterogenous nature. The Morgantown area includes four of the farms (Agronomy Farm, Horticulture Farm, Animal Sciences Farm, Reedsville Farm) and two of the forests (University Farm Woodlot, University Forest).

This document provides an overview of the farms and forests that support the teaching, research, and service programs at WVU, and describes their central role in current and future programs of the West Virginia Agricultural and Forestry Experiment Station and the WVU College of Agriculture, Forestry and Consumer Sciences. Students, faculty, university administrators, and the public should find the information useful in understanding the historical, current, and future contributions of the farms and forests to the needs of the Mountain State.

Research and Teaching Facilities

Morgantown Area Farms and Forests:

Agronomy Farm. The Agronomy Farm is located about three miles from the Evansdale Campus at Morgantown and comprises 175 acres. Thirty acres of woodland are on the farm. The original agronomy farm was acquired in 1915 with funds contributed by the City of Morgantown and Monongalia County. The experiment station traded acreage from this original agronomy farm to Morgantown in 1946 to build an airport, receiving the county farm in return. In 1959, the airport was expanded, and 85 additional acres of agronomy farm at the airport site were traded for what is now the Agronomy Farm near Canyon Road. Facilities at the farm include the manager's residence, a 1,360 square foot state-of-the-art pesticide storage and handling facility, two storage buildings for machinery and general storage totaling 6,500 square feet, a 6,000 square foot office and shop building, and a 1000 bushel capacity corn storage crib. The farm has implemented a detailed soil conservation plan that includes contour strips, drop boxes, diversion ditches and grass waterways.

Research Activities: Research projects on this property include studies of forage crop genetics and breeding to improve yield and quality, biological control of multiflora rose, mites affecting plants and honey bees, control of non-point source pollution from land application of wastes and field crop variety testing. Additional research focuses on stand longevity, waste products application rates, tillage systems, acid mine drainage, sludge and oil degradation in soil.

Teaching Activities: Because this farm is near campus, faculties from programs throughout the college use it as an outdoor laboratory, working with students enrolled in 20 different courses. Among the programs are Agronomy, Recreation, Parks and Tourism Resources, Agricultural and Environmental Education, Animal and Veterinary Sciences, Environmental Protection, Entomology and Landscape Architecture. Faculties from other University programs also use the facility for both teaching and research.

Service Activities: This acreage serves as a site for Field Days and as a showplace for visitors. It also serves as a site for land judging competitions. The University Cross-country and Track teams use the farm for activities related to their programs.

Animal Sciences Farm. The Animal Sciences Farm is located on the outskirts of Morgantown and is the largest of the farm properties at 935 acres. The present-day farm consists of part of the original 1895 dairy farm, part of the property bought in 1915 and land acquired in 1941 with funds appropriated by the state.

This farm has several structures, including a livestock pavilion, 23,100 square feet of facilities for the dairy operations, 16,250 square feet of buildings supporting the livestock work, 14,100 square feet of state-of-the-art facilities for poultry research, and 11,700 square feet of space in the Food Animal Research Facility that was completed in 1992 with $1.5 million of appropriated University building funds. In 1999, the experiment station's first ruffed grouse research house and aquaculture holding facilities were constructed on the farm.

During a typical year, this farm houses 140 Holstein and Ayrshire dairy animals, 60 Angus and Hereford beef cattle, 60 hogs, 170 sheep, 800 chickens, 50 turkeys, and 100 ruffed grouse.

Over the past two decades, the facilities at the Animal Sciences Farm have been updated and operations have been centralized for efficiency. Examples of centralization include moving the operations of the old dairy unit after the 1974 fire, and all Morgantown operations of the poultry unit, to the Animal Sciences Farm. Part of the Old Dairy Farm area is used by the university's Physical Plant for growing sod and ornamental plants used in maintaining the campus grounds. In 1999, the site of the original poultry farm operations near Monongalia General Hospital was chosen for construction of the Library Archives Building and as the future site of the University Research Park.

Research Activities: Studies of temporal changes in ovarian functions of domestic ruminants and pigs, environmental and economic impacts of nutrient flows in dairy forage systems, muscle growth regulation, processed muscle foods, tissue complications in broiler-breeder chickens and shifting breeding time for ewe flocks to increase farm income are conducted on this farm. Several additional projects utilize the beef cattle, dairy cattle, sheep and swine available at this facility. The Food Animal Research Facility supports research by professors in Medical Physiology, Biology and Surgery as well as those in the College of Agriculture, Forestry and Consumer Sciences.

Teaching Activities: There is extensive use of the Animal Sciences Farm for educational purposes. Students enrolled in 39 courses utilize the farm. With a decreasing percentage of animal science students coming from farm backgrounds, the experience gained from working under supervision with the animals becomes very important to the students. College programs including Animal and Veterinary Sciences, Recreation, Parks and Tourism Resources, Agronomy, Agricultural and Environmental Education, Environmental Protection, Entomology and Landscape Architecture use the Animal Sciences Farm. In some of these programs, professors involve students from different majors in field laboratory work. Professors from the Department of Biology and from the Departments of Surgery and Emergency Medicine utilize the animals and the Food Animal Research Facility for student instruction. About 20 graduate students do research on this farm each year.

Service Activities: The proximity of the farm and the wide variety and range of ages of the animals housed there make it appropriate for educational tours by dozens of groups of different ages and origins. Among the groups served are some 7,000 elementary students from three states who come annually for “Kiddie Days.” Young people come on group tours. High school students come for Career Development Events and FFA competitions, 4-H judging contests, Science Field Days and the Governor’s Honor Academy. College-age students come for regional and state competitions, including land, animal and soil judging competitions. The West Run Watershed Committee, the USDA/NRCS, WVU Parent’s Association, Mountaineer Kennel Club, National Livestock Graders, Monongalia Cattleman’s Association, West Virginia County Agents and the Fruit Growers Association are among the organizations that have used these farm facilities for meetings.

A composting facility on the farm serves not only the nutrient management needs associated with wastes generated by the livestock on the farm, but also processes all the leaves and grass collected on the campus and a significant portion of the wood chips resulting from tree trimming and power line maintenance in the city and campus area. Mulch and fertilizer from the facility is used for grounds maintenance operations on the campus.

Horticulture Farm. The Horticulture Farm, at Morgantown, borders Chestnut Ridge Road, Route 705, and the Old Dairy Farm. This 65-acre site was acquired in 1949 through a gift to the college. Plantings of apples, grapes, blackberries, blueberries, raspberries, peaches, and strawberries are on the farm. Buildings on this farm include a 2,300 square foot combination office, shop, and storage building, a livestock-handling facility used by Animal Sciences, and a 5,300 square foot barn for machine storage. The farm has well maintained roads and water available for irrigation on part of the farm. The University Physical Plant uses about 4 acres of the area for storage of items related to maintenance and upkeep of the campus' buildings and grounds.

Research Activities: Projects at the Horticulture Farm include studies of the biological control of multiflora rose, mites affecting plants and honey bees in West Virginia, cold hardiness of plants and biological and cultural management of plant parasitic nematodes. Experiments are also underway with wetland plants and rhododendron. Early research on the chestnut blight was done at this farm. Future research will focus on entomology and sustainable organic farming, including changes that occur in soils, fauna and weeds during transition to organic production.

Teaching Activities: The proximity of the Horticulture Farm to the Morgantown campus makes it especially useful for instructional activities. Among the programs using this farm for field study are Recreation, Parks and Tourism Resources, Agronomy, Agricultural and Environmental Education, Horticulture, Landscape Architecture, Arachnology and Entomology. In total, students enrolled in 21 different courses do field study at this farm. The Wildlife and Fisheries program has boat and equipment storage facilities located on this farm.

Service Activities: This farm serves as a site for land judging competitions. The employees also build good will by welcoming hundreds of young children who come to pick apples and scores of local residents who come to buy seasonal fruit.

Reedsville Farm. The 995-acre Reedsville Farm is 22 miles east of the Morgantown campus, near Arthurdale in Preston County. The first acreage for this farm, about 457 acres, was acquired from the federal government in 1944. It had been part of the Arthurdale Homestead project established during Franklin Roosevelt's presidency. Additional acreage was acquired in 1982 when the former Ohio Valley Farm in Mason County was traded for land adjoining the original Reedsville Farm.

Much of the acreage is utilized for forage crop production to support the herds and flocks on this farm and the Animal Sciences Farm in Morgantown. The site is home to about 200 head of livestock (bulls, cows, heifers and calves). Physical facilities include a 576 square foot animal handling building; two cattle shelters, one 4,096 square feet and the other slightly smaller at 3,200 square feet; a 2,913 square foot bull and holding barn; and a 3,536 square foot animal handling shelter.

Research Activities: Scientists from the Division of Plant and Soil Sciences and the Division of Animal and Veterinary Sciences have joint projects at the Reedsville Farm. Their projects include studies of the ovarian and uterine function of domestic animals, forage crop genetics and breeding to improve yield and quality, forage/livestock management systems, field crop variety testing and use of poultry waste as a soil amendment. In the 1980s and early 1990s, the Department of Obstetrics and Gynecology in the School of Medicine had research cattle that were managed and studied at this farm. Some forestry research has been done and plantings of conifers and hardwoods have been evaluated. Oak wilt disease also has been studied here.

Teaching Activities: The distance of the Reedsville Farm from campus reduces its routine use for teaching. Nonetheless, students enrolled in five different courses use the farm. An average of three to five graduate students do their research there each year.

Service Activities: Again, given the distance of this farm from the Morgantown campus, it has limited service functions. It has been used, however, as a site for demonstration of precision agriculture techniques, for field day activities and for teaching individual farmers specific methods or ideas for animal or crop management.

University Forest. This 7,664-acre forest is located 12 miles east of Morgantown, straddling the borders of Monongalia and Preston counties. The forest is part of the original Coopers Rock State Forest. It is managed to support programs in the college's Division of Forestry under terms of a lease from the West Virginia State Division of Forestry that expires in 2059. It is used extensively as an outdoor laboratory.

The forest is composed primarily of oak-hickory, oak-yellow poplar and mixed hardwoods. It is predominately an even-aged forest as a result of heavy logging in the 1930s when the land was in private hands. The construction of the 6,000 square-foot Westvaco Natural Resources Center in 1997 expanded the teaching, research and service capabilities at the forest. This facility houses a laboratory, small and large meeting spaces, an open-air pavilion, a kitchen for caterers, an office for the forest supervisor and an apartment for visitors.

Research Activities: The University Forest is the only state-owned experimental and research forest in West Virginia. Research at the forest includes studying effects of diameter-limit cutting on structure and development of Appalachian hardwood stands, nutrient cycling in a West Virginia forest ecosystem, the biological control of multiflora rose, mites affecting plants and honey bees, impacts of gypsy moth defoliation on forests, and incorporating landscape patterns into long-term forest management plans. Additional research focuses on white-tailed deer management, oak regeneration, forest thinning practices, soil compaction and logging practices.

Teaching Activities: Students enrolled in 27 different courses have enriching learning experiences at this forest. Among the programs using the property as an outdoor teaching and research facility are Forest Management, Wildlife Management, Wood Industries, Recreation, Parks and Tourism Resources, Landscape Architecture, Entomology and Agricultural and Environmental Education.

Service Activities: Numerous meetings, seminars and conferences are held at the Westvaco Natural Resources Center. Among users of the facility are the CAFCS Visiting Committee, the CAFCS Dean and other administrators and the CAFCS Alumni Association, the Westvaco Research Staff unit, the WVU President and University officers, and the USDA/NRCS group. Academic and administrative units of the university use it for meetings and workshops. The forest also is used for agriculture and forestry judging contests and Career Development-FFA events. Because of its location adjacent to Coopers Rock State Forest and Interstate 68, the University Forest receives heavy public traffic and use. Hiking trails are maintained, and the forest is open to hunting and fishing as required by state hunting and fishing regulations. Although camping is not permitted in the University Forest, camping areas are located on nearby county and state forest lands.

University Farm Woods. The Farm Woods is a 107-acre tract located adjacent to the Animal Sciences Farm. Access is from the West Run Road. Management was transferred to the Division of Forestry from Animal Sciences (then the Division of Animal Husbandry) in 1953. Until that time the area had been known as the Stock Farm Woods. The forest includes a mixture of cove hardwoods of various ages and some plantings of exotic conifer species such as bald cypress, Norway spruce, and Douglas-fir. There are no facilities on the site.

Research Activities: Activities have included experimental plantings of non-native tree species, herbicide control of competing vegetation and intermediate silvicultural treatments.

Teaching Activities: Professors in Forest Management frequently use this property for field experiences for students enrolled in several different courses. They are joined by faculty in Recreation and Parks Management, Agricultural and Environmental Education, Landscape Architecture, Entomology and Arachnology. Students enrolled in 17 different courses have done field studies at the woodlot.

Service Activities: Some of the more frequent "service" activities at this site are the unplanned recreational uses of the land. Hikers, bikers, snowmobilers and cross-country skiers make frequent use of the property.

Outlying Farms and Forests:

Kearneysville Tree Fruit Research and Education Center. This 165-acre farm is located in the Eastern Panhandle just west of Kearneysville in Jefferson County. It was acquired in 1930 with funds appropriated by the state legislature. Original plans described a dairy enterprise, but this never materialized, due largely to the dairy operations at the Reymann Farm. Instead, it was developed to serve the fruit growing enterprise that is dominant in that region of West Virginia. Two full-time faculty and nine support staff are currently located at this facility. Faculty and support staff are housed in the 8,000 square foot Edwin Gould building that was completed in 1984. This building contains seven offices, four laboratories, four cold storage rooms, library, kitchen, and 2,500 square foot conference room. The Center also includes a 6,000 square foot equipment shop, six storage buildings of 8,000 square foot, 1,900 square foot pesticide storage and loading facility, 1300 square foot greenhouse, and 14 x 70 foot mobile home for faculty and graduate students. A majority of the orchard is protected from frost damage by four wind machines, and a high density dwarf planting of various training systems can be irrigated. An 1870-era home at the entrance to the property is occupied by the Farm Supervisor.

Research Activities: Research is being conducted on apples, peaches and corn. Tree fruit projects in entomology and/or plant pathology include integrated management of tree fruit insects, alternative disease control strategies for the production of apples for processing and assessment of alternative and conventional IPM strategies for the production of apples for processing. Research projects focusing on the multi-disciplinary evaluation of new apple cultivars and evaluation of tunnel spray systems are conducted in cooperation with scientists at the USDA Appalachian Fruit Research Station. Corn research consists of annual variety testing. Students from area colleges are hired as summer research aides to assist with many of these projects, while other students serve as interns to gain field and laboratory experience.

Teaching Activities: The distance of this farm from the Morgantown campus precludes the widespread use of this farm for teaching. However, students enrolled in three different courses, namely, Horticulture 107 and Plant Pathology 301 and 309, do field studies at this farm.

Service Activities: Faculty and staff at the Kearneysville Center are engaged in numerous outreach activities. A March fruit school and monthly in-season grower meetings are conducted in the Kearneysville/Martinsburg and Romney areas. *The Orchard Monitor*, a 14-issue bi-weekly newsletter, is prepared and mailed to growers, consultants and industry field representatives in the eastern panhandle and neighboring states. Faculty also visit orchards and conduct demonstration projects, and provide diagnostic services to clients and County Extension Agents. Numerous tours of the Kearneysville Center and presentations to local civic groups are provided. Scientists at the Center have created an award-winning web site detailing their ongoing projects and providing valuable information on orchard pests, diseases and production practices.

Reymann Memorial Farm. The Reymann Memorial farm was given to the University in 1917 by the Anton Reymann family of Wheeling, West Virginia, in memory of Mr. Lawrence A. Reymann. The farm is located on highway 259 about two miles north of Wardensville in Hardy County. All livestock and implements, as well as an operating cheese factory, were part of the gift. A condition of the gift is that the experiment station must maintain the herd of Ayrshire dairy cattle that were included with the farm. The 996-acre tract is found in two sections separated by a narrow strip of privately owned land. Timber covers about 350 acres of the two sections.

In a typical year, the farm will maintain 75 sheep, 160 cattle, 1,600 turkeys, 2,100 chickens, and 150 bulls in the Bull Performance Test Program

Among the structures on this property are a 29,400 square foot cattle performance barn, a 12,400 square foot cattle barn, and an 11,000 square foot broiler/breeder building. A cattle research barn, bull barn, bull shed, sheep barn and turkey/broiler building account for an additional 25,000 square feet of enclosed space.

In 1999, renovation of the Greek Revival-style farmhouse to its classic appearance was initiated with a special grant from the legislature. The house was built in the 1840s.

Research Activities: Studies are conducted of temporal changes in ovarian functions in domestic ruminants, increasing farm income by shifting the breeding time for ewe flocks, and field crop variety testing. Graduate students are often involved in this research. In poultry research, fertility and production of broiler feeders, comparisons on genetic lines of turkeys, and production issues related to vectors of salmonella introduction into turkey flocks are studied.

Teaching Activities: While this property is some distance from the Morgantown campus, it is nonetheless used for instruction. Faculty from the Division of Animal and Veterinary Sciences use the site as a laboratory for four different courses. About five graduate students in livestock and poultry conduct research on the farm each year as part of their education.

Service Activities: Among the activities are tours and field days. The Bull Performance Test Program, initiated in 1967, is highly valued as a critical service to cattlemen throughout the state. It assists cattlemen in identifying and obtaining high quality sires for their beef herds.

Tygart Valley Forest. This 495-acre tract of upland oaks is located near Dailey in Randolph County. The forest was acquired from the U.S. Department of Health, Education, and Welfare in September, 1970 as property excess to their needs. WVU's ownership came as a result of a lease-option agreement wherein the University was required to demonstrate proper use and need for the property over a 21-year lease period. Research in the past has centered on natural regeneration of oak types and on oak wilt disease. Harvesting of mature timber has occurred. Research on oak wilt disease and factors affecting natural regeneration of upland oak types was done here in the past. At the current time, there are no active research, teaching, or service activities underway.

Willow Bend Demonstration Farm. This farm was deeded to the WVU Foundation in 1970 by Mr. R. W. Johnson. It is located three miles south of Union in Monroe county. The primary mission of this 238 acre farm is demonstration of beef cattle and sheep husbandry practices, along with pasture management.

Demonstration Activities: Cross-breeding programs, grazing of sheep and cattle together, castration and management techniques, calibration of soil tests seeding of warm season grasses and fertilization of hill pastures have been undertaken at this demonstration farm. Long-term cooperative research with USDA's Agricultural Research Service, focusing on developing forage-based livestock systems that are appropriate to hill land farms, is being initiated in 1999.

Teaching Activities: Given the distance of this property from the Morgantown campus, it is not used for student instruction.

Service Activities: This property serves as a demonstration farm. In addition to being a site to showcase precision agriculture, it serves as a loading point for the West Virginia cattle feedlot test. The farm is also the site for the annual Autumn Harvest Festival in Monroe County. This event features many cultural, social and educational opportunities for the community.

Research Publications

Only a portion of the research done by faculty, staff, and graduate students in the experiment station directly involves the farms and forests. Nevertheless, considerable research has been done there over the years. Appendix I is a summary of publications reporting on research that was conducted at the farms and forests. Over the past 40 years almost 1,200 reports of research based upon research at West Virginia University's research farms and forests have added to the store of scientific knowledge about forestry and agriculture in West Virginia. Of that number, 469 were theses and dissertations done by students earning advanced graduate degrees.

Land Uses

The farms and forests have many uses in direct support of teaching and research programs. They are used repeatedly as field laboratories for undergraduate and graduate instruction. The fields and forests are extensively used for both short-term and long-term research. The lands must be managed to provide feed and forage to maintain the animals and wildlife for research and teaching. There must be lands retained to provide a reservoir of areas available for implementing future research and protecting ongoing long-term research.

In some cases, two or more needs can be accommodated simultaneously on the same plot of ground. In other cases, uses may not be compatible for reasons of experimental design or, perhaps, for reasons of safety and health of both animals and humans. Some lands may be part of long term research requiring that they not be disturbed for considerable time periods. Because of these considerations, specific areas of the farms and forests may appear to a casual observer not to be actively used. Nevertheless, those areas play an important role in the long term needs and plans of the experiment station and the college.

Categories and areas of land uses for University Farms and Forests are shown in the following table (Details of land use for each property are shown in Appendix II). In total the properties contain 9,186 acres of forests, woodlands and tree plantations, 2,570 acres of crop and pasture land, and 116 acres of infrastructure (buildings, roads, parking, drain ways, etc.).

Land uses of University Farms and Forests

Land use category	Acres
Crops	
Corn	195
Hay and Alfalfa	974
Pasture	1,197
Forest and Woodland	8,326
Forest Plantations	60
Natural Reserved Forest	800
Horticulture	
Tree fruits	100
Berries and vegetables	5
Other	80
Infrastructure	135
Total	11,872

Statistics from 1999 give a picture of how the lands are used in a more-or-less typical year to support the research and teaching programs (Appendix II). Research projects of the West Virginia Agricultural and Forestry Experiment Station make the widest use of the farms — 6,200 acres are involved in active short- and long-term experiments. Undergraduate and graduate classes utilize 4,358 acres each year for laboratory exercises and student projects. In some cases, students use the same areas that may be under current use for research. A certain portion of the area of a farm or forest is usually under reserve for planned and future research activities — in 1999 this reserve area was 2,704 acres.

Community Benefits

Unlike the usual teaching and research laboratories of the University, the farms and forests provide a variety of benefits and values that go beyond the direct mission of the college and the experiment station.

In addition to students and researchers, visitors to the farms and forests for organized events number nearly 10,000 each year. The general public makes wide use of the forests for casual activities such as hiking, birdwatching, photography, and fishing. Many visitors and sightseers frequent the farms to look at animals and to see farm operations. The value of the green space provided by the rolling fields of the farmlands is readily confirmed by many local citizens, although its full extent and value to the community is difficult to assess. The verdant settings provide a welcome respite from paved roads and housing developments, especially in the Morgantown area. This feature of the farms and forests becomes more important each year as the amount of greenspace on the in-town campuses declines with the addition of new campus development projects (e.g., Student Recreation Center, Wise Library addition, new Life Sciences Building, and the indoor football facility).

There will, of course, be conflicts between casual users and teaching, research, and demonstration activities. Visitor safety with respect to machinery operations, pesticide applications, and other operational activities may require that certain portions of the farms and forests be closed to the public. Hunting is not permitted because of the danger to farm animals, students, workers, and property. (Hunting is permitted at the University Forest during the regular hunting seasons, except for posted safety areas.) Other areas of the farms and forests may require closure in order to protect experimental plots from unintended damage by visitors.

There are, however, many opportunities for additional joint community-university activities. Nature walks, flower trails, botanical gardens, vegetable garden demonstrations, and petting pens are some examples of activities that could be initiated with the support and cooperation of community groups and organizations. The college and experiment station view these as important outreach activities to the citizens of West Virginia.

Meeting Community Concerns

Activities involving animals, crops, forest harvesting, and outdoor recreation may result in sights, sounds, and smells that some people find objectionable: animal waste can impair water and air quality if not properly managed; recreational activities can result in trampled crops, noise, vandalism, or soil compaction and erosion; forestry research may require harvesting of trees; crop research and production may require pesticides to control insects or diseases.

Management of all of the farms and forests is on a sustainable basis. This management policy requires that lands will be maintained so that future generations of students, researchers, and the public will have options for study, experimentation, and services that are at least as diverse as the options now available.

To meet current environmental standards, the experiment station has invested considerable funds in 1) construction of a composting facility for livestock manure, 2) design and construction of two modern pesticide storage and handling facilities, 3) removing underground fuel storage tanks, and 4) implementing soil conservation plans. Activities and facilities are monitored continually to insure that they meet the highest standards of practice.

Operational plans are used for managing each of the properties and are periodically updated. These plans spell out the uses of each farm or forest. As part of the planning process, opportunities for community-related activities, as discussed above, are considered. In most cases, non-university support in the way of finances and human resources will be required to initiate and maintain such activities.

Issues Impacting the Farms and Forests

The farms and forests are vital to the continued research, teaching, and public service missions of both the WVU College of Agriculture, Forestry and Consumer Sciences and the West Virginia Agricultural and Forestry Experiment Station. However, there are significant existing and potential issues that can determine the future of the quality and quantity of farm and forest resources available. Many of these issues are ones over which the college and experiment station have little control. These include those arising from University policy, state and Federal regulations and public perceptions and concerns over the farms and forests. The following are the most significant issues in terms of their potential impact on the future roles of farms and forests in maintaining academic, research and service programs in agriculture and forestry.

Continued pressure from university and non-university parties for non-academic or non-agricultural uses of Morgantown farms and forests. There has been a steady attrition of the farm and forest lands, especially farm lands, for uses other than agricultural research and education. Recent examples include: about one-half of the Poultry Farm which has been designated for construction of a Research Park and the new Library Archive facility; four acres of the Horticulture Farm have been turned over to the Physical Plant to house the Buildings and Grounds Operations; and portions of the Old Dairy Farm have been given to the College of Business and Economics for location of an office facility and to Environmental Health and Safety for hazardous materials storage. The West Virginia Department of Natural Resources has considered portions of the Reymann Memorial Farm for a proposed golf course. The WV Department of Highways proposes locating a bypass that would fragment the Animal Sciences Farm. The Monongalia County School Board has looked at portions of the Old Dairy Farm for a future elementary school. The State Police were interested in a portion of the Animal Sciences Farm for a new barracks. These are examples of pressures to utilize the properties for activities other than experiment station research, college teaching and service, making the maintenance of, and planning for, programs at the farms and forests difficult.

The college and experiment station have been, and continue to be, good citizens when it comes to accommodating proposed uses of its farms. However, it often seems that the University's farms and forests, especially the Morgantown area properties, are viewed as a bank of land from which areas can be withdrawn as needed for campus and community development. The faculty of the College of Agriculture, Forestry and Consumer Sciences registered their concern over this in April, 1999 by adopting a Position Statement on Farms and Forests. The faculty's position on future uses of the lands was summarized as follows:

> "The college faculty will not support any proposal for construction, development, or

> sale of any lands currently managed by the College of Agriculture, Forestry and Consumer Sciences that has not been presented to, and deliberated by, the faculty and the college administration. The general area and location of farms and forests managed by the College of Agriculture, Forestry and Consumer Sciences are well situated to support current and future teaching, research, service, and community outreach programs. These lands cannot, therefore, be displaced without measures to mitigate damage to the agricultural and natural resources programs of West Virginia University."

Development of natural gas deposits at the University Forest. A significant deposit of natural gas apparently underlies the University Forest. The gas is owned by the State of West Virginia and is not controlled by the University. For several years there has been commercial interest in developing these gas deposits. Gas well development in the University Forest could threaten long-term research projects and the ecological balance necessary for the long-term management of this facility. Fragmentation of forest areas resulting from pipelines, well sites and access roads could result in long-term harm to the forest's usefulness for research and teaching. In accordance with the 1999 Position Statement on Farms and Forests, such inroads on this unique research and teaching area will be opposed by the college faculty.

Proposed West Run Bypass. The proposed West Run Bypass threatens the loss of land, greater difficulty of access, and increased threat of commercial development at the Animal Sciences Farm and University Farm Woods. Such development could represent a slow death to the current operations and to the natural setting of the West Run area. The question of a bypass location remains unsettled and, thus, a serious threat to both Animal Sciences Farm operations and greenspace availability in the area. The Position Statement on Farms and Forests makes clear the faculty position on such encroachments.

Retaining the amount of property necessary to meet future needs. The current farms and forests are considered adequate for existing needs of the college. The areas in the properties are comparable to that of similar colleges at land grant universities. Future needs and the ability to have research sites available for unanticipated high priority projects must be considered (e.g., threats of gypsy moth outbreaks and development of new agricultural strategies such as sustainable agriculture). Development of new facilities must be based on long-term usage to prevent conflict with urban land development pressures and usage. Sufficient land is needed to isolate neighboring development from agricultural production practices and to buffer animal facilities.

Meeting Future Needs

The farms and forests will be required to meet very different needs in agricultural and natural resources programs of the future. Forestry and agriculture have changed markedly in the past 25 years, largely as a result of research and innovative technologies coming from agricultural experiment stations, where new farm and forest technologies are developed and tested.

Agriculture and forestry will no doubt change as markedly in the next quarter century.

The astounding advances in computer sciences, which are predicted to continue their rate of innovation well into the 21st century, will continue to find their way into operations and systems to control with great precision such things as pest management and irrigation. Fruits and vegetables will become increasingly grown in controlled environments regulated by computers. Machinery, using computers, will be integrated to plant, prune, selectively harvest, super cool, and field pack the crops. Development of such precision agricultural advances may require less land for their implementation by the farmer, but research and development, with its field testing and evaluations, will not likely change the need for either the quantity, or diversity, of field research facilities.

Forestry is a long-term enterprise. Experiments in forestry are many years, perhaps decades, in duration. Active research plots at the University Forest date back more than 50 years. The lasting effects of new systems of forest pest control, long-term effects of harvesting methods on water quality and quantity, and the rates of change of wildlife habitat after forest disturbance are but a few of the kinds of research that require stable land tenure in order to be brought to their fruition.

Future research focuses. As we enter the 21st Century the dominant research themes at the West Virginia Agricultural and Forestry Experiment Station are the areas of agricultural and forest production. For the next 25 years, these are likely to remain the primary areas of focus. Forest resources will remain the major component of West Virginia's natural resources, and research in forest management, including silviculture and pest management, will require even greater efforts than at present. Amenity uses of the forest and resource-based tourism are becoming more important research areas in our service based economy. Coolwater aquaculture, a research area and agricultural enterprise in its infancy in 1999, will become an important component of the station's future research on food production systems. Horticultural production systems for vegetables, using whole farm sustainable systems, will become a larger part of the station's research portfolio. Forage-based livestock systems will be in greater demand by farmers, and research will be directed to improved monitoring of both animals and pasture conditions. Computer-based systems for monitoring of land and animals to increase productivity will be developed and brought to the farmer for everyday use. To accomplish these research objectives, diverse land resources will be required for research and validation.

Future facility needs. Future research programs will require no less in the way of farm and forest resources than has been required in the past 25 years. Discoveries of practical significance to farmers and foresters, whether they are discovered in the laboratory or in the field, must be developed and further evaluated on the farm or in the forest to facilitate their transfer to commercial farm and forest enterprises.

At this time, only the Food Animal Research Facility on the Animal Sciences Farm and the Kearneysville Tree Fruit Research and Education Center have laboratory facilities that are readily available to researchers on the site. Future considerations of facilities should include establishing appropriate laboratories at the Horticulture Farm to serve the new sustainable agriculture research program, the Reedsville Farm to support animal sciences research, the Reymann Memorial Farm to support developing poultry, sheep, and beef cattle research, and the University Forest. The cooperative research efforts being initiated in 1999 at the Willow Bend Farm will require basic laboratory and additional office space. These labs need not be elaborate, but should provide water, air, bench, basic chemical, and microscope capabilities so that preparations and examinations can be done expeditiously on the site when necessary. Aquaculture is a developing area and a research facility on the Animal Sciences farm will be required for the full development of that research need.

The day-to-day management of the farms and forests requires modern management capabilities for maintaining records on animal and land uses, timber, crop and animal production data, real-time logging of experimental data, and basic business management information. These facilities must be interfaced directly to the main campus so that researchers can access information without costly time and travel costs.

By far the most important, and continuing, facilities need is building and grounds maintenance. Forest road construction and maintenance, farm fencing, routine building and structural maintenance, and water and power system upgrades are a continuing need. The urgency for investment in these matters will only increase with each passing year.

Farm Master Plan. In 1999, the college's Farms and Forests Task Force recommended that a Farm Master Plan be developed. It was suggested that the plan detail long-term goals and needs and would be most useful for relating the farms to each other and to other community and campus needs. A primary focus will be the Morgantown area farms and forests. The Farm Master Plan can examine, in detail:

1. Current and future requirements for land and facilities to protect and enhance the farms and forests as major state research environments for studying agriculture and natural resource uses and problems.
2. Consolidation of agricultural uses to increase the efficiency of operations.
3. The improvement of a network of open spaces and community uses.
4. The improvement of the landscape quality of the farms and forests while recognizing and enhancing their functional requirements of agricultural uses.
5. Recognizing and responding to community needs, and establishing a means for communication and cooperation in the development of university and community interests.
6. Development of a land use pattern that recognizes requirements relative to environmental quality.

A Farm Master Plan will consolidate planning for future research, teaching, service and community needs on the farms and forests. The Master Plan will provide either stable tenure and commitment to the farms and forests and the programs dependent on them, or provide mutually-agreed alternatives to the continued uses of existing properties. In either case, the academic programs will be in better position to plan their future activities. Of course, the planning process itself will provide an opportunity for dialog among the faculty, the community, and central administration about the farms and forests. Development of a Farm Master Plan will require the support and commitment of faculty as well as University administration at all levels.

Conclusion

The farms and forests that serve the research programs of the West Virginia Agricultural and Forestry Experiment Station and the teaching and service programs of the WVU College of Agriculture, Forestry and Consumer Sciences have a historical and productive relationship to West Virginia University's land-grant mission. Because of the variety of conditions represented by the properties, the teaching and research programs have been able to keep pace as forestry, agriculture, and natural resources needs of the state have changed.

Thousands of students have studied practical applications of natural resources and agricultural sciences at the farms and forests. Graduate students have carried out research and developed their capabilities to tackle other problems in agriculture and forestry when they enter their professional careers. The diversity of farm and forest conditions that are available to the teaching programs is an important reason for the strength of the college's undergraduate and graduate programs.

The farms and forests are important resources to the communities where they are located. The research at these sites often deals with current issues and serves as a source of information to citizens. The farms and forests, especially those located some distance from the main WVU campus, provide significant local visibility and recognition for West Virginia University. They are a reminder that the forests, farms, water, and mountains are the most significant natural attributes of the Mountain State, and they have enduring quality in her landscape.

Appendix I

Research Publications
1960 - 2000

Farm/Forest	Graduate Theses and Dissertations	Research Bulletins and Publications
Agronomy and Horticulture Farms	101	115
Animal Sciences, Reedsville and Reymann Farms	264	72
Kearneysville Center	15	349
University Forest, University Farm Woods and Tygart Valley Forest	88	169
Willow Bend Farm	1	5
Total	469	710

Appendix II

Land Uses of WVU Farms and Forests
1999

Uses of the farm and forest properties to support research and teaching programs in 1999 are indicated below for each property. Specific uses change each year as new research is initiated, previous research is concluded, animal herd sizes increase or decrease, weather conditions influence production, and as new technology is introduced. Nevertheless, the figures below give a reasonable depiction of how the farms and forests are used.

The total acres of a property are not all involved in active experiments and teaching uses at one time. Some of the land uses (e.g., hay and alfalfa, pasture) are directed towards maintaining flocks and herds of animals. Such uses support teaching and research, but do so in an indirect manner. Without these areas, considerable funds would be needed to purchase feed. And in some cases, animal herds simply could not be maintained on the farms without these areas.

A similar situation with forest lands can be drawn. Forest scientists may carry out silvicultural experiments on the effects of harvesting methods on forest stand development. Forest stand development in West Virginia is a decades-long process, however. Such areas must be preserved for many years in order to determine the final outcomes of the experiments.

As a consequence, agricultural and forestry research and teaching areas that may appear to be underused or not used at all the casual or uninformed observer, can be intimately involved in current research and production.

In the following tables, the *Land uses* category shows the broad uses being made of a property and the total acres of that property. *Active experiment areas* shows the areas and type of research that are being done on the property. The category of *Teaching uses* summarizes the area of the property used for classes and the type of classes making use of the area (some of these areas may overlap with *Active experiment areas* since it is often educational for classes to study ongoing research and production). *Reserved for future research* are areas that, because of unique soil, vegetation, or other characteristics, and because of future plans, are in reserve from other uses.

A. Agronomy Farm

	Acres
Land uses	
Corn	20
Hay and alfalfa	105
Woodland	30
Infrastructure	20
Total acres	175
Active experiment areas	
Forestry	
Diseases & Insects	5
Agronomy	
Corn	20
Forage	20
Teaching Uses	
Land conservation	100
Soils	30

B. Animal Sciences Farm

	Acres
Land uses	
Pasture	300
Corn	62
Hay & alfalfa	210
Woodland	385
Infrastructure	15
Total acres	972
Active experiment areas	
Agronomy	
Crop trials	2
Horticulture	
Apples	3
Market Garden	1
Animal Sciences	
Dairy	20
Sheep	20
Beef Cattle	230
Poultry	5
Teaching Uses	
Soils	2
Animal Sciences	200
General Agriculture	20

C. Horticulture Farm

	Acres
Land uses	
Tree fruits	6
Berries & vegetables	5
Pasture	6
Other	38
Infrastructure	10
Total acres	65
Active experiment areas	
Pathology & Entomology	
Diseases & Insects	4
Horticulture	
Apples	6
Berries & vegetables	5
Pears	1
Agronomy	
Pasture	6
Teaching Uses	
Landscape Architecture	2
Horticulture	10
Soils	2
Reserved for future research	
Farm	8

D. Kearneysville Tree Fruit Research and Education Center

	Acres
Land uses	
Tree fruits	94
Other	42
Infrastructure	29
Total acreage	165
Active experiment areas	
Agronomy	
Corn	56
Forage	0.5
Horticulture	
Apples	73
Peaches	9
Blueberries	0.5
Reserved for future research	
Orchard	6

E. Reedsville Farm

	Acres
Land uses	
Pasture	440
Corn	55
Hay & alfalfa	348
Woodland	140
Infrastructure	12
Total acreage	995
Active experiment areas	
Agronomy	
Corn	2
Forage	90
Animal Sciences	
Beef Cattle	350
Reserved for future research	
Farm	100

F. Reymann Memorial Farm

	Acres
Land uses	
Pasture	280
Corn	58
Hay & alfalfa	249
Forest/woodland	378
Infrastructure	31
Total acreage	996
Active experiment areas	
Agronomy	
Corn	1
Forage	10
Animal Sciences	
Sheep	105
Beef Cattle	683
Poultry	17
Teaching Uses	
Animal evaluations	3
Food Science	1
Other Uses	
Application of nutrient by-products	330
Reserved for future research	
Farm	75

G. Tygart Valley Forest

	Acres
Land uses	
Production forest	495
Total acreage	495
Reserved for future research	
Forest	495

H. University Farm Woods

	Acres
Land uses	
Forest	97
Plantations	10
Total acreage	107
Teaching Uses	
Landscape Architecture	10
Recreation	20
Forestry	100
Wildlife	50
Reserved for future research	
Forest	50

I. University Forest

	Acres
Land uses	
Production forest	6801
Forest plantations	50
Natural areas/reserved	800
Infrastructure	13
Total acreage	7664
Active experiment areas	
Forestry	
Forest Management	2950
Wildlife Management	825
Other	500
Teaching Uses	
Forest Management	3100
Recreation	120
Wildlife Management	460
Landscape Architecture	120

J. Willow Bend

	Acres
Land uses	
Pasture	171
Hay	62
Infrastructure	5
Total acreage	238
Active experiment areas	
Farm Management	10
Reserved for future research	
Farm	170

Notes

Notes

For more information

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Please visit any of the following web sites for additional information:

West Virginia University
http://www.wvu.edu/

The WVU College of Agriculture, Forestry and Consumer Sciences
http://www.caf.wvu.edu/

The West Virginia Agricultural and Forestry Experiment Station
http://www.caf.wvu.edu/wvafes/main.htm

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